a motor, a control switch and a feedback circuit connecting said meter and said motor in parallel through said switch and an amplifier having an output end disposed in said feedback circuit the output of the amplifier serving to actuate said control switch for controlling the conduction of the electric measuring wire through said meter to measure electric quantity and

A' Cond.

wherein said feedback circuit is actuated by the power consumption of said motor to close said switch to connect said feedback circuit to said meter so that the real power storage is displayed on said meter; and

wherein the non-reset measuring meter is responsive only to a reduction in measured voltage and not to any increase in measured voltage.--.

REMARKS

Applicant has cancelled claims 1-6 and added new claim 7 which is based on claims 1, 2 and 4. Applicant is also submitting herewith proposed changes to the drawings with the proposed changes marked in read. Assuming that those changes meet with the Examiner's approval, new formal drawings will be submitted subsequent to the allowance of the claim.

It is respectfully submitted that new Claim 7 is now in proper form and that new claim 7 overcomes the rejection under 35 U.S.C. § 112.

New claim 7 calls for an electric quantity indicator for a battery and is supported by page 2, lines 12-14 and by Figures 1 and 2. Accordingly, no new matter has been entered.

The issue of the "addressed dividing a value in memory" has been attended to by cancelling claim 3. Further, the

issues of the sufficiency of the disclosure with respect to claims 5 and 6 has been attended to by cancelling claims 5 and 6. Those features of claims 3, 5 and 6 are not present in new claim 7.

With respect to the rejection of claims 1-6 (page 6 of the Office Action) as containing subject matter which is not disclosed in the specification in such a way as to enable one skilled in the art to which it pertains to make and use the invention, it is Applicant's contention that new claim 7 is enabled by the specification and drawings. Further, the details pointed out on pages 6 and 7 of the aforementioned Office Action have been attended to in drafting new claim 7.

Original claims 2 and 4 were also rejected under 35 U.S.C. § 102.

In making that rejection the Examiner stated:

> As best as the Examiner can determine from the claims of the present invention, the references to Lomholt, Eguchi, and Harvey each disclose all of the aspect of the present invention. A battery, load, and detection branch are connected in parallel, and a control signal is fed back from the load to the detection branch to switch the detector in the detection branch on in order to allow the detection of voltage across the battery being applied to the load.

It is respectfully contended that new claim 7 is clearly and patentably distinguished over the cited art. To be more specific, new claim 7 is directed to an "electric quantity indicator for a battery in an electromotive vehicle comprising." The claim calls for a battery, an electric wire and a non-reset measuring meter connected to the battery by the wire. In addition, the claim calls for a motor, a control switch and a feedback circuit connecting the meter and the

motor in parallel through the switch and an amplifier having an output end disposed in a feedback circuit. The output of the amplifier serving to actuate the control switch for controlling the conduction of the electric measuring wire through the meter to measure electric quantity. It is respectfully submitted that this unique combination of elements is not disclosed or suggested by the prior art.

Further, new claim 7 calls for wherein said feedback circuit is actuated by the power consumption of the motor to close the switch to connect the feedback circuit to the meter so that the real power storage is displayed on a meter. The claim also calls for wherein the non-reset measuring meter is responsive only to a reduction in measured voltage and not to any increase in measured voltage. Again, it is respectfully submitted that this combination of elements is not disclosed or suggested by the prior art.

Accordingly, it is Applicant's contention that claim 7 is now in proper form and patentably distinguished over the cited art. Prompt favorable action is therefore solicited.

Respectfully submitted,

September 19, 2001
Date

By: _____
David E. Dougherty
Reg. No. 19,576

DOUGHERTY & TROXELL
One Skyline Place, Suite 1404
5205 Louisbourg Pike
Falls Church, VA 22041
Telephone: 703-845-0758
Facsimile: 703-575-2707

APPENDIX B

ELECTRIC QUANTITY INDICATOR FOR AN ELECTROMOTIVE VEHICLE

FIELD OF THE INVENTION

The present invention relates to an improvement of the electric quantity indicator for an electromotive vehicle, and especially to [a] an electric quantity indicator without measuring a virtual voltage [due to increment of voltage of battery] as the battery is stopped.

BACKGROUND OF THE INVENTION

Since the resource of earth is finite, and combustion will induce air pollution in the environment, [] [t]The convention[al] way for deriving power from oil is replaced by electric power which is suitable for the requirement of environmental protection. For example, the electromotive vehicle is an apparent example. However, [t]The power supplies are not popular in many places, [moreover, power can not be supplied as the oil used in the prior art]. A large charging time is required and [the] amount of power can not be seen [from the outlook]. Therefore, [a] current detector is required for the driver because no one hopes to push an electromotive vehicle [in the midway] due to exhaustion of power [from a] fault indication.

Fig. 4 shows a prior art electric quantity indicator, wherein in the initial position, a voltmeter is installed. The measuring result is indicated by a scale for viewing the storage electric quantity so as to estimate traveling length of the electromotive vehicle. As the user is at home, he (or she) may charge the battery in order to avoid [as the] power [is exhausted in the midway]. However, such a design has some defects so that the real electric quantity can not be indicated. Since as a battery is stopped and rests for a period of time, the voltage will

increase so as to present a virtual voltage as shown in Fig. 5. Thus, in the prior art, it is possible that the indicator shows that 90 percents of power are stored, but practically, only 30 percents of power are stored. Therefore, user will make a mistake due to a fault indication, even the car stops in the midway so that the driver must push car along the way.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide an electric quantity indicator for an electromotive vehicle, which can show the real electric quantity.

In order to achieve the aforesaid objects, the present invention provides an electric quantity indicator for an electromotive vehicle comprising: an electric measuring wire parallel connected to a battery; a feedback circuit connected between a motor of the power supply load and the electric measuring wire; and a meter responsed to the quantity of electricity of the electric measuring wire. The meter is an electronic display panel, and the feedback circuit and the electric measuring wire are installed with analog to digital (A / D) converters for address dividing to the value in a memory, in which this value is displayed in the aforesaid meter. Thereby, as a load is actuated and power is consumed, the feedback circuit will detect and the electric measuring wire will conduct, real power storage is displayed on the meter so as to be viewed by a user. Therefore, the condition that due to an error of electric quantity, the user can not know the real the electric quantity and thus the car is stopped owing to exhaustion of electric power is avoided.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a circuit diagram of the first embodiment about the quantity of electricity indicator according to the present invention.

Fig. 2 shows a circuit diagram of the second embodiment about the quantity of electricity indicator according to the present invention.

Fig. 3 is a schematic view showing the display of the converted value in the second embodiment of the present invention.

Fig. 4 is a circuit diagram of a prior art of a quantity of electricity indicator.

Fig. 5 shows a coordinate of the equal quantity of a battery.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figs. 1 and 2, the quantity of electricity indicator of an electromotive vehicle according to the present invention is illustrated, which comprises:

An electric measuring wire 1 is parallel connected to a battery 5.

A feedback circuit 3 is connected between the motor of the power supply load 2 and the electric measuring wire 1.

A meter 4 responded to the quantity of electricity of the electric measuring wire 1.

In the first embodiment, the meter 4 is a simple non-reset meter which is connected in series to the electric measuring wire 1. An amplifier 31 is installed at the feedback circuit 3 for amplifying signals. The output of the amplifier 31 can actuate a control switch 32 to control the electric measuring time for the conduction of the electric measuring wire 1.

Thereby, with reference to Figs. 1 and 5, in the design of the present invention, as the motor of the load 2 is actuated and a large current is generated, the feedback circuit 3 detects to conduct the control switch 32 so that the electric measuring wire 1 conduct. Then, conducts a signal to

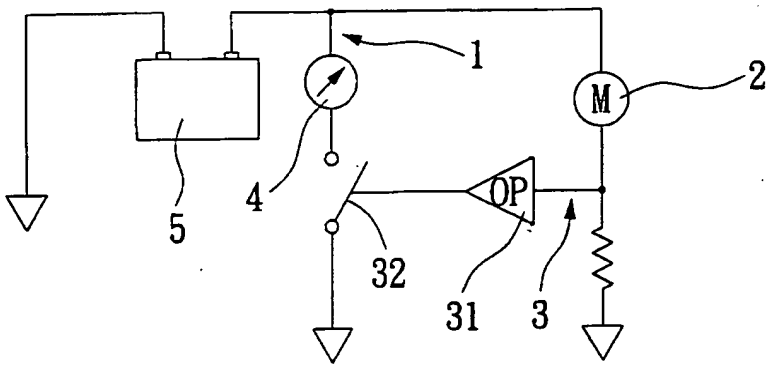
the electric quantity is displayed on the quantity of electricity indicator for being viewed by user. Since a non-reset electric meter is used and feedback detection is only used in large current. After detecting, the displayed electric quantity will not restore without any response to the virtual current generated from the battery 5 which is switched off. Other than a large current generates so that the current electric quantity is reduced, the data on the meter 4 may response the real electric quantity stored in the battery 5 for being viewed by the user. Therefore, in the prior art application, due to an error of electric quantity, the user can not know the real electric quantity and thus the car is stopped owing to exhaustion of electric power.

With reference to Figs. 2 and 3, the second embodiment of the present invention is illustrated. The meter 4 can be an electronic display panel. The feedback circuit 3 and the electric measuring wire 1 are installed with respective an A / D converter for corresponding to a recording value 62 dividing by an address 61 in memory 6 so that the value is displayed on the meter.

In order that the meter 4 can response the storage of battery 5, in control, the feedback circuit 3 must used to measure in a large current. Moreover, the recording value 62 in the memory 6 only reduced as the battery 5 changes from a high voltage to exhaustion of all power. If the battery is stopped so that voltage increass, it will not be recorded except that the battery 5 is charged and voltage is increased to a certain value (for example, a maximum value of charge saturation), then the memory 6 will reset REST to record the high value again. Therefore, an error due to virtual voltage is avoided.

Although the present invention has been described with reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all

such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.



APPROVED 11/7/01

Fig. 1

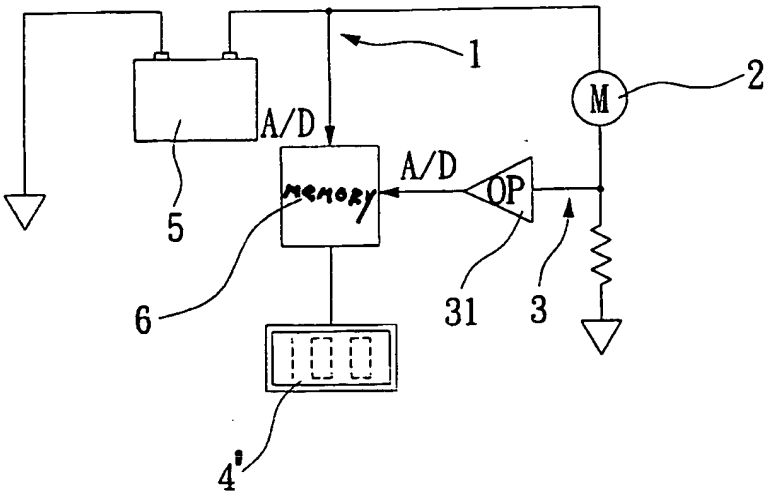
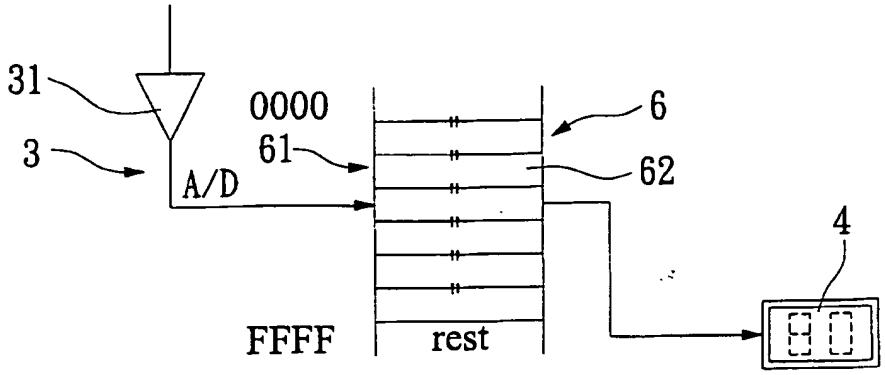
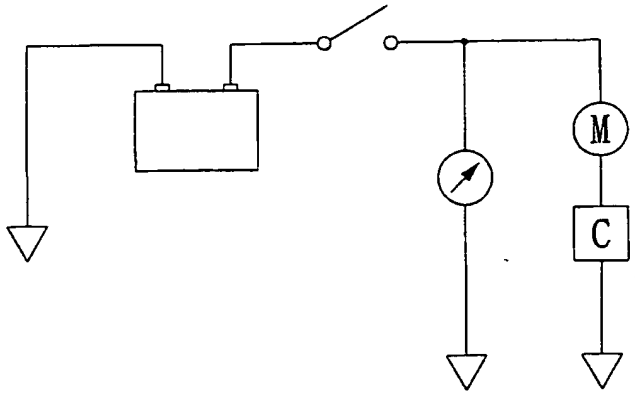


Fig. 2



APPROVED 11/7/01 MH

Fig. 3



PRIOR ART

Fig. 4